

Abnormal Events

Los Alamos National Laboratory

Laboratory Implementation Requirements LIR 402-130-01.2

Original Issue Date: 12/21/00 Revised Date: 7/2/02

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1.0 Introduction

1.1 Overview

Note: [Click here](#) for Lessons Learned *that may apply* to the requirements contained in this LIR.

The Laboratory performs many complex functions that present the opportunity for many different types of abnormal events. These events can range from potentially life-threatening emergencies, such as a fire or explosion, to relatively minor incidents, such as a non-life-threatening occupational injury or illness. This Laboratory Implementation Requirement (LIR) 402-130-01.0, "Abnormal Events," supersedes Administrative Requirement (AR) 1-1, "Accident and Occurrence Reporting"; AR 9-4, "Accidental Oil, Chemical, and Airborne Releases"; LIR 201-00-04.0, "LANL Incident Reporting Process"; Laboratory Standard (LS) 120-01.1, "Occurrence Investigation and Reporting"; Laboratory Procedure (LP) 107.01, "Notification and Reporting of Radiological Incidents"; and Program Requirements Document (PRD) 120-01, "Occurrence Investigating and Reporting Program." It complements Laboratory Performance Requirement (LPR) 307-01-00, "Performance Assurance." Attachment A, "Abnormal Event Initial Notification Requirements," is a flow diagram that summarizes the requirements in Section 6.1 of this document. Attachment B contains recommended major implementation criteria for self-assessment. The requirements in this document and the Laboratory Occurrence Reporting Requirements/Guidance contained in Operations Support Tool 402-130-01 ([Click here](#)) shall become effective immediately on the issue date.

1.2 In This Document

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2.0 Purpose

This LIR shall provide workers and managers at the Laboratory the required method for reporting abnormal events. The requirements contained in this LIR shall ensure that the required responses will be provided and reporting requirements will be met.

3.0 Scope and Applicability

The requirements in this LIR shall apply to all abnormal events that occur on Laboratory-managed property, except for Laboratory-managed property at the Nevada Test Site. Laboratory workers on official business off-site shall follow the notification and reporting requirements of the off-site location. This LIR defines the initial notification requirements that shall be implemented for all abnormal events as defined in Section 4.2. It also provides follow-up requirements that shall be implemented for the following types of abnormal events:

- injuries/illnesses,
- environmental incidents,
- property damage,

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- radiological incidents, and
- reportable occurrences.

Although this LIR does include initial notification requirements that shall be implemented for emergencies and vehicle accidents/incidents, it does not include follow-up requirements for these types of abnormal events. Follow-up requirements that shall be implemented for emergencies are defined in facility emergency response plans and in [LIR 403-00-01](#), "Los Alamos National Laboratory Emergency Management." Follow-up requirements that shall be implemented for vehicle accidents/incidents are contained in [LIR 402-1320-01](#), "Vehicular Safety."

For the purposes of this LIR, abnormal events shall not include incidents of security concern. Reporting requirements for incidents of security concern are defined in [LIR 406-00-01](#), "General Security."

4.0 Definitions

4.1 Acronyms/Abbreviations

AR	Administrative requirement
CAIRS	Computerized Accident/Incident Reporting System
CAS	Central Alarm Station (911)
Ci	Curie
DAC	Derived air concentration
DOE	Department of Energy
DOT	Department of Transportation
dpm	Disintegrations per minute
EM&R	Emergency Management and Response Group
HSR	Health, Safety, and Radiation Protection
HSR-1	Health Physics Operations Group
HSR-2	Occupational Medicine Group
HSR-4	Health Physics Analysis Laboratory
HSR-5	Industrial Hygiene and Safety Group
PS-7	Occurrence Investigation Group
FM	Facility manager
FWO-Fire	Fire Protection Group
JCNNM	Johnson Controls Northern New Mexico
LANL	Los Alamos National Laboratory
LC	Legal Council (where the Risk Management Office resides)
LIR	Laboratory implementation requirement
LP	Laboratory procedure
LPR	Laboratory performance requirement
LS	Laboratory standard
mR	millirem
OSHA	Occupational Safety and Health Administration
PAAA	Price Anderson Amendments Act
PRD	Program requirements document
PTLA	Protection Technology Los Alamos
RIR	Radiological incident report
S	Security (Division)

4.2 Terms

Abnormal Event—A real-time event that adversely affects workers, the public, property, or the environment. Examples include, but are not limited to,

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- vehicle accident/incident resulting in damage to the vehicles involved and/or personnel injury;
- occupational injury/illness;
- fire/explosion;
- radiological or hazardous material spill;
- loss of process ventilation that results in a spread of radiological or hazardous contamination;
- natural phenomena (flooding, severe weather, forest fire);
- procedural/regulatory violation (violations of DOT regulations); and
- property damage that is not security-related (damage that results in a claim against the Laboratory, damage caused by fire, contaminated personal clothing, DOE-recordable levels as defined in Section 6.2.3).

CAIRS form—An electronic injury/illness investigation report completed by HSR-5.

Emergency—An abnormal event or occurrence of the most serious nature, which demands immediate action.

Environment-responsible organization—For the purpose of this LIR, the environment-responsible organization is one of several environmental groups at the Laboratory.

Environmental Incident—Any unpermitted spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of contaminants in the environment.

Incidents of security concern—Incidents of concern to DOE's Safeguards and Security Program because they involve inadvertent or deliberate failures to follow department safeguards and security regulations and directives and/or alleged or suspected violations of US laws or their implementing regulations. Examples include incidents involving failure to protect or control classified matter; theft, destruction or loss of DOE property, threats or acts of bodily harm to DOE employees or contractors; and sending e-mail with classified content over an unclassified computer system.

Investigator—Individual assigned to gather the facts, determine the causes of an abnormal event, and, as appropriate, facilitate development of corrective actions.

Nuclear safety noncompliance—a failure to comply with an applicable nuclear safety requirement per 10 CFR 820, "Procedural Rules for DOE Nuclear Activities."

Occupational illness—An illness resulting from a work-related exposure to chemical, physical, or biological agents that may result in acute or chronic disease. Examples are work-related acute or chronic systemic poisoning, repetitive strain injuries, dermatitis, and hearing loss.

Occupational injury—An injury, whether major or minor, resulting from a single, instantaneous work-related accident in Laboratory-controlled areas or operations. Examples are work-related lacerations, bruises, fractures, sprains, and acid burns.

OSHA 200 Log—The OSHA record-keeping form used to record injuries and illnesses and to note the extent of each case.

Radiological incident—An event resulting from the use of radiation-producing materials or equipment that meets criteria established by HSR-1, which are at a lower threshold than the criteria in Laboratory Occurrence Reporting Requirements/Guidance ([click here](#)). A radiological incident report is generated to document each event.

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Recordable injury/illness—An injury or illness that must be recorded in accordance with DOE Order 231.1, as determined by HSR-5.

Reportable occurrence—An abnormal event or condition that is reportable to the DOE Occurrence Reporting and Processing System according to the severity thresholds in the “Laboratory Occurrence Reporting Requirements/Guidance” ([click here](#)). The types of reportable occurrences involve, but are not limited to, facility conditions; environmental concerns; personnel safety; radiological protection; safeguards and security; transportation; loss or damage to DOE property; defective items, materials, or services (including counterfeit/suspect parts); nuclear explosive events; and cross-category items to include related occurrences, near-miss events, and potential concerns.

Responsible facility manager—For the purposes of this LIR, the facility manager responsible for the facility management unit in which an abnormal event occurs.

Safety- and Environment-Responsible Line Manager—Individuals who are responsible for directing the day-to-day activities of employees under their supervision. See the definition in “Integrated Safety Management,” [LA-UR-98-2837](#).

Significant abnormal event—An abnormal event that (1) is an occupational injury/illness that requires emergency transport, (2) causes major damage to a facility, (3) results in a reportable environmental release, (4) results in a facility shutdown or stand down, or (5) is otherwise considered significant by the safety- and environment-responsible line manager.

Worker—Any employee, contract employee, or visitor who performs work at the Laboratory.

5.0 Precautions and Limitations

Guidance Note: Organization-specific procedures may be required to define subsequent notification and response requirements to ensure implementation of this LIR.

WARNING NOTE: Calling 911 from a cellular phone does not necessarily access the 911 center closest to the caller's location. In Los Alamos, dialing 911 on a cellular phone typically connects to the Santa Fe Emergency Dispatch Center. It is a good idea to preprogram the Los Alamos Police Department (662-8222), the Fire Department (667-7080), and EM&R (667-6211) phone numbers in cellular phones for emergency use in the local area.

6.0 Implementation Requirements

Guidance Note: The requirements contained in this LIR are separated into initial notification requirements for all abnormal events (Section 6.1) and follow-up actions for some specific types of abnormal events (Section 6.2). Not all abnormal events will require the follow-up actions in Section 6.2, however, some abnormal events may fall under several categories in Section 6.2.

6.1 Initial Notification

Guidance Note: The requirements in this section for initial notification are summarized in a flow diagram in Attachment A, “Abnormal Event Initial Notification Requirements.”

If an abnormal event occurs off-site, the worker shall follow that location's notification procedures. If the event involves an occupational injury/illness or damage to DOE property, the worker shall also notify his/her safety- and environment-responsible line manager as soon as possible.

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Immediate actions required to mitigate an event shall take precedence over the notification requirements.

Individual/Organization	shall
Worker	<ul style="list-style-type: none">• call 911 (the Central Alarm Station) if the event is an emergency that requires response by an ambulance, the Police Department, Fire Department, Laboratory security, or the Hazardous Devices Team.• notify the safety- and environment-responsible line manager/ designee of all abnormal events as soon as possible.• if the event is not an emergency, contact the responsible facility manager. If you do not know who the responsible facility manager is or the facility manager is unavailable, call EM&R at 7-6211.• participate in any follow-up investigation when requested.
Central Alarm Station	<ul style="list-style-type: none">• initiate the required response for the event reported.• notify EM&R of all 911 calls that originate at or affect the Laboratory.
EM&R	<ul style="list-style-type: none">• initiate the required response and notification sequence for the event reported in accordance with EM&R procedures.
Responsible Facility Manager	<ul style="list-style-type: none">• initiate the required response and notification sequence for the event reported in accordance with facility procedures.• if the event can not be resolved with facility or organizational resources, call EM&R at 7-6211.
Safety- and Environment-Responsible Line Manager/Designee	<ul style="list-style-type: none">• ensure that the facility manager is notified of all abnormal events as soon as possible.• for significant abnormal events (as defined in Section 4.2) notify the line division office within 30 minutes of notification from worker.
Line Division Office	<ul style="list-style-type: none">• within 30 minutes of notification of a significant abnormal event (as defined in Section 4.2) by the safety- and environment-responsible line manager,<ul style="list-style-type: none">• notify the Director's Office, the Associate Director for Operations, and the line Associate Director; and• send e-mail notification to event@lanl.gov, which includes the Senior Executive Team, DOE's Office of Los Alamos Site Operations, and the Community External Relations Director.
Line Associate Laboratory Director	<ul style="list-style-type: none">• for a significant abnormal event (as defined in Section 4.2) determine whether responsible sponsors need to be notified and notify responsible sponsors, as required.

6.2 Follow-up Actions

Guidance Note: The follow-up actions and the organization(s) responsible for actions vary, depending on the type of abnormal event. Follow-up actions for the following types of abnormal events are included in this section:

- injuries or illnesses,
- environmental incidents,
- property damage
- radiological incidents, and
- reportable occurrences.

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6.2.1 Injuries or Illnesses

Individual/Organization	shall
Safety- and Environment-Responsible Line Manager/Designee	<ul style="list-style-type: none">• ensure that the affected worker(s) reports to HSR-2.• ensure that work restrictions outlined by HSR-2 are followed.• adjust work as required to enable a worker to perform his/her assignment safely.• provide information to the investigator, as requested, to complete the injury/illness report.• consider corrective actions recommended by the investigator and establish corrective actions based on risk and root cause. Provide corrective actions to HSR-5.• assign responsibility for completion of corrective actions, ensure their completion, and provide completion information to HSR-5 for record keeping.
Responsible Facility Manager	<ul style="list-style-type: none">• review the injury/illness to determine whether it is a reportable occurrence. If the injury/illness is a reportable occurrence, implement the requirements in Section 6.2.5.
Occupational Medicine Group (HSR-2)	<ul style="list-style-type: none">• evaluate the injured or ill worker and provide required medical treatment.• coordinate the medical management of ill or injured workers to maximize their recovery and safe return to work and to minimize lost time and its associated costs.• document the injury or illness and send documentation to HSR-5.• assist the worker compensation specialist in determining whether the injury or illness is compensable under New Mexico worker compensation laws.
Industrial Hygiene and Safety Group (HSR-5)	<ul style="list-style-type: none">• review injury and illness documentation, determine whether the injury or illness is work-related, determine recordability, and request additional investigation, when required.• notify the safety and environment-responsible line manager/designee and the responsible facility manager of any recordable injuries/illnesses in their organization/facility.• develop procedures to meet the reporting requirements of DOE Order 231.1, "Environment, Safety, and Health Reporting," which includes, but is not limited to, maintaining the OSHA 200 Log, "Bureau of Labor Statistics Log and Summary of Occupational Injuries and Illnesses," and submittal of CAIRS reports to DOE.• ensure that accident reports and related records are retained, maintained, and accessible in accordance with the requirements of DOE Order 231.1.
Investigator	<ul style="list-style-type: none">• investigate injury or illness, assess causes, determine what corrective actions have been taken, and recommend additional corrective actions, as required.• if the injury/illness is recordable, provide HSR-5 with the information required for completing the CAIRS report, review the completed CAIRS report for accuracy, and sign the report.

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6.2.2 Environmental Incidents

Individual/Organization	shall
Environment-Responsible Organizations	<ul style="list-style-type: none">• respond to the incident as required.• recommend corrective actions to the responsible facility manager and/or safety- and environment-responsible line manager to mitigate the environmental impact.• make regulatory notifications as required.
Safety- and Environment-Responsible Line Manager/Designee	<ul style="list-style-type: none">• complete a spill report (ES&H Form 1461, http://labreg.lanl.gov/htmls/eshforms.html) when requested by the environment-responsible organization.• implement corrective actions to mitigate the incident and prevent future incidents.
Responsible Facility Manager	<ul style="list-style-type: none">• investigate, evaluate, and document the incident.• provide information to environment-responsible organizations, when requested.• ensure that a spill report (ES&H Form 1461, http://labreg.lanl.gov/htmls/eshforms.html) is completed when requested by the environment-responsible organization.• review the incident to determine whether it is a reportable occurrence. If reportable, implement the requirements in Section 6.2.5.• establish and implement corrective actions based on risk and root cause if the incident involves facility operations.

6.2.3 Property Damage

Individual/Organization	shall
Safety- and Environment-Responsible Line Manager/Designee	<ul style="list-style-type: none">• report verbally or in writing any DOE property loss or damage to the Risk Management Office (LC).
Responsible Facility Manager	<ul style="list-style-type: none">• review the incident to determine whether it is a reportable occurrence. If the property damage is a reportable occurrence, implement the requirements in Section 6.2.5.
Risk Management Office (LC)	<ul style="list-style-type: none">• provide information on property loss or damage to HSR-5 and FWO-Fire (fire damage only) to complete required reporting.
Industrial Hygiene and Safety Group (HSR-5)	<ul style="list-style-type: none">• report to DOE the estimated loss or damage to DOE property or other property amounting to \$5,000 or more, or estimated costs of \$5,000 or more for cleaning (including decontamination), renovating, replacing, or rehabilitating structures, equipment, or property.• report to DOE the estimated damage of \$1,000 or more that involves government-owned, -rented, or -leased vehicles or privately owned vehicles operated while on official business.
Facilities and Waste Operations Fire Protection Group (FWO-Fire)	<ul style="list-style-type: none">• in accordance with DOE Order 231.1, annually report fire damage to the DOE fire protection authority having jurisdiction.

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6.2.4 Radiological Incidents

Individual/Organization	shall
Safety- and Environment-Responsible Line Manager/Designee	<ul style="list-style-type: none">ensure that HSR-1 and the responsible facility manager are notified of all radiological incidents involving workers or areas under their jurisdiction.provide incident information requested by HSR-1.ensure that corrective actions are implemented, as required.
Responsible Facility Manager	<ul style="list-style-type: none">review the incident to determine whether it is a reportable occurrence. If the radiological incident is a reportable occurrence, implement the requirements in Section 6.2.5.
Health Physics Operations Group (HSR-1)	<ul style="list-style-type: none">respond to the incident as required (see LIR 402-700-01, "Occupational Radiation Protection Requirements," Chapter 2).investigate, characterize, and document the incident as required by HSR-1 procedures.ensure that the responsible facility manager and safety- and environment-responsible line manager have been notified.
Health Physics Analysis Laboratory (HSR-4)	<ul style="list-style-type: none">perform analyses of field samples and report results promptly to HSR-1.

6.2.5 Reportable Occurrences

Individual/Organization	shall
Owning Division Director or Program Manager	<ul style="list-style-type: none">establish a system to ensure that reportable occurrences are identified and reported for facilities owned by the division or program office.provide to the facility manager management support to fulfill the responsibilities for occurrence investigating and reporting, including authority to direct physical changes in the facility, if required for corrective action.ensure that all tenant managers implement the requirement to participate in critiques, investigations, and corrective actions when requested by the responsible facility manager.
Safety- and Environment-Responsible Line Manager	<ul style="list-style-type: none">participate in critiques and investigations and report development when requested by the facility manager.ensure that workers cooperate fully with the investigation of abnormal events or conditions.review and approve occurrence reports when requested by the facility manager.
Responsible Facility Manager	<ul style="list-style-type: none">upon notification of an incident that is potentially reportable, identify all safety- and environment-responsible line managers who, based on the involvement of his/her workers in the incident, must attend or be represented at the critique and request their attendance.notify the Occurrence Investigation Group and the DOE facility representative as soon as possible of a potentially reportable occurrence.ensure that the scene of the occurrence is stabilized through immediate actions and preserved for investigation.ensure that a timely critique with required representation of all stakeholders is held (see "Critique Guidance in Operational Support Tools," http://drambuie.lanl.gov/~esh7/critique.html).categorize the event or condition according to Laboratory

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	<p>Occurrence Reporting Requirements/Guidance (click here).</p> <ul style="list-style-type: none">• ensure that the investigation, causal analysis, and corrective action process are documented and address all aspects of the occurrence.• notify either the facility or LANL PAAA Coordinator of any radiological issues, Hazard Category 2 or 3 authorization basis issues, or any actual or potential nuclear safety noncompliance per 10CFR820.
Occurrence Investigation Group (PS-7)	<ul style="list-style-type: none">• maintain an occurrence-reporting program to meet the requirements of DOE Order 232.1.• ensure that the on-call facility manager is notified of any reportable or potentially reportable event or condition within his/her facility.• assist the facility manager in critiquing, categorizing, investigating, analyzing causes, developing and tracking corrective actions, and all report writing related to a reportable occurrence.• maintain LANL entries in the DOE Occurrence Reporting and Processing System database and official records of all reportable occurrences.• serve as subject matter expert for the training program for all personnel with occurrence-investigating and -reporting responsibilities.• provide periodic operating experience reports on occurrences to Laboratory management for use in self-assessments and lessons-learned programs.

6.3 Training

Training for this LIR shall be accomplished through general employee training for new employees and through organization-specific training for follow-up actions for specific types of abnormal events, as required. Safety- and environment-responsible line managers shall ensure that current workers are briefed on the requirements in this LIR.

7.0 Documentation

The documentation required depend on the type of abnormal event and shall be retained in accordance with DOE Order 200.1, "Information Management Program."

http://www.explorer.doe.gov:1776/cgi-bin/w3vdkhgw?qryXIC_TBaj_doe-295

8.0 References

8.1 Document Ownership

The office of institutional coordination responsible for this document is HSR-5.

8.2 Referrals

Central Alarm Station, 911

Emergency Management and Response (EM&R) Group, 7-6211

Industrial Hygiene and Safety Group (HSR-5), 7-5231

Occurrence Investigation Group (PS-7), 5-0033

Responsible facility manager, <http://arania.lanl.gov:8080/fpub/ifmpo/htmls/fmcouncil.html>

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8.3 Documents

10 CFR 820, "Procedural Rules for DOE Nuclear Activities"

DOE Order 440.1A, "Worker Protection Management for DOE Federal and Contractor Employees"

DOE Order 232.1A, "Occurrence Reporting and Processing of Operations Information"

DOE Order 151.1, "Comprehensive Emergency Management System"

DOE Order 231.1, "Environment, Safety, and Health Reporting"

DOE Order 5400.1, "General Environmental Protection Program"

DOE Order 200.1, "Information Management Program"

Laboratory document LA-UR-98-2837, "Integrated Safety Management"

Laboratory document LPR 402-00-00, "Worker Health and Safety"

Laboratory document LPR 403-00-00, "Emergency Management"

Laboratory document LPR 404-00-00, "Environmental Protection"

Laboratory document LIR 403-00-01, "Los Alamos National Laboratory Emergency Management"

Laboratory document LIR 402-1320-01, "Vehicular Safety"

Laboratory document LIR 402-700-01, "Occupational Radiation Protection Requirements"

Laboratory document LIR 406-00-01, "General Security"

Laboratory document OST 402-130-01, "Laboratory Occurrence Reporting Requirements/Guidance"

OSHA (Occupational Safety and Health Administration). "Recording Occupational Injuries," 29 CFR 1904.1-13.

9.0 Attachments

Attachment A Abnormal Event Initial Notification Requirements

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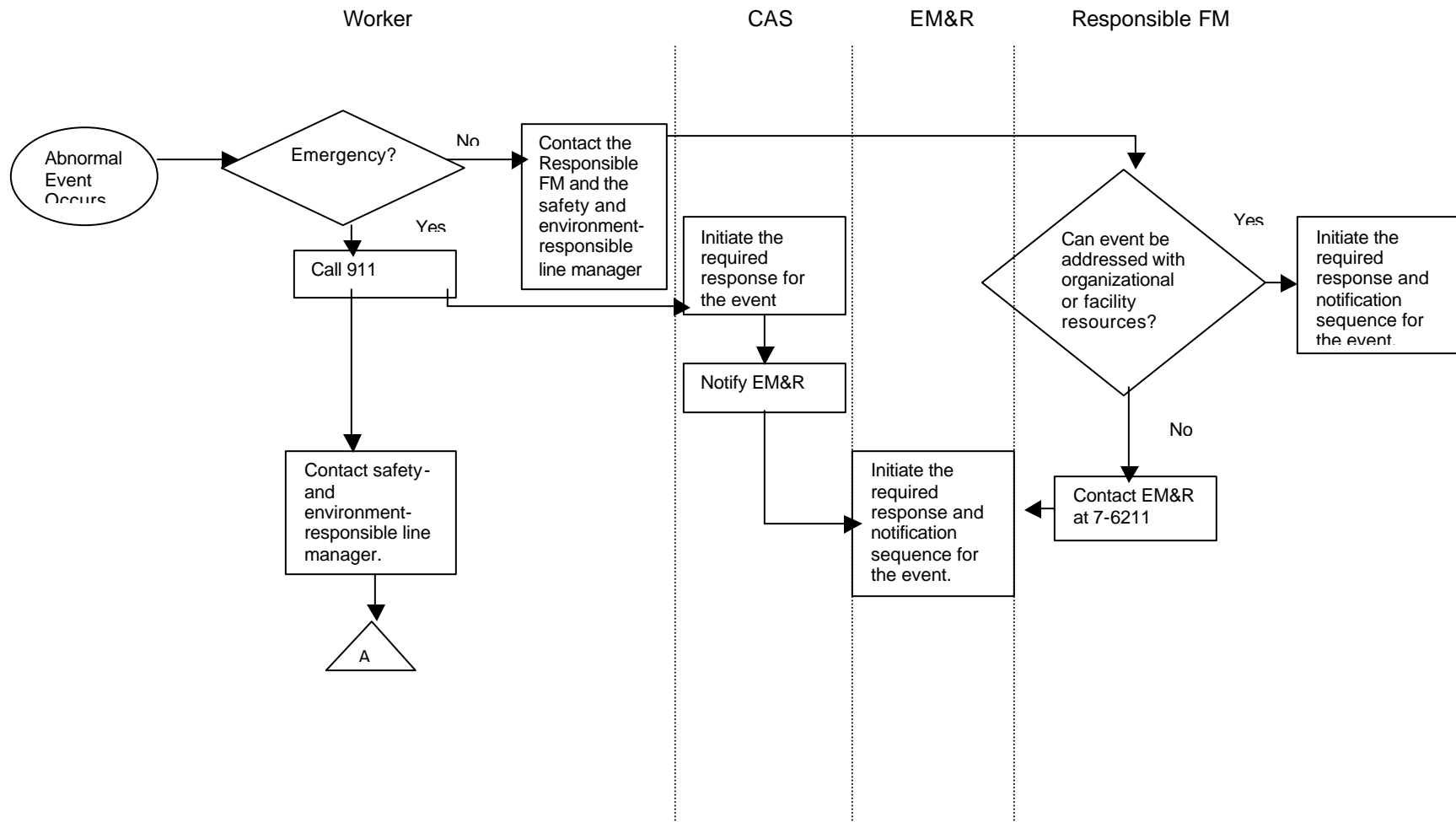
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ATTACHMENT A ABNORMAL EVENT INITIAL NOTIFICATION REQUIREMENTS



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ATTACHMENT A ABNORMAL EVENT INITIAL NOTIFICATION REQUIREMENTS (Continued)

